Advanced Cryocooler Technology Development Program (ACTDP)

Questions and Answers

January 22, 2002

Question 1: ACTDP TA Appendix B, Table B.3 lists separate "Proposed Personnel" and "Resumes" sections while Appendix C.2 covers the resumes in the Proposed Personnel section. Can we assume that there is just the Proposed Personnel section which consists of the resumes?

Answer 1: Yes

Question 2: Could you please clarify the required nature of the "technology provider" person specified in Appendix B, p. 3, item 11? Specifically, is a non-technical person with strong business management skills acceptable, provided that this person receives necessary technical input from other key project personnel?

Answer 2: Yes

Question 3: In what section does the Past Performance (form JPL 0358) go?

Answer 3: Cost Section (refer to TA Appendix B, top of page 6: "Group A shall be completed and returned as part of your quotation or cost proposal")

Question 4: Are there limitations on minimum figure text size?

Answer 4: No

Question 5: The JPL RFP refers in section 3.3.1.2 - JPL Approved Parts List. Can this be provided electronically?

Answer 5: JPL Standard Parts are defined as those that meet or exceed the following reliability standards:

1) NPSL (NASA Parts Selection List) Level-1
2) MIL-PRF-38534 Class K QML Source
3) MIL-PRF-38535 Class V, QML-38535
4) MIL-PRF-19500 JANS, QPL-19500
5) NPSL Level 2 ,with PIND, DPA and radiographics upscreening
6) MIL-PRF-38534, Class H, QML-38534 (MIL-PRF-38510, Class B) with PIND, DPA and radiographics upscreening
7) MIL-PRF-38535, Class Q, QML-38535 with PIND, DPA and radiographics upscreening
8) MIL-PRF-19500, JANTXV, QPL-19500 with PIND, DPA and radiographics upscreening
9) Military Established Reliability (ER) passive devices, Failure Rate Level S or R
10) It is recommended that all crystal oscillators be procured to CS515574, Rev. E, General Specification for Crystal Oscillator Hybrid Integrated Circuit.

JPL also accepts some Non-Standard Parts. Non-Standard parts are defined as parts not meeting the minimum quality and reliability criteria of Standard Parts as defined above. In general, all non-standard parts must be upgraded/screened to the standards of Standard Parts. Unique, custom parts (e.g., ASICs and Custom Hybrids) and commercial microcircuits (COTS, PEM's, etc.) are considered non-standard. Plastic

parts are considered a high risk and the use of plastic parts is not prohibited, but extreme caution is to be taken when considered for flight use. 100% screening shall be performed on plastic parts at the part level. This screening shall be in accordance with JPL D-19426, Plastic Encapsulated Microcircuits (PEM's) Reliability/ Usage Guidelines for Space Applications, or contractor equivalent. Non-Standard Parts must be documented on NSPAR's and individually approved.

Question 6: Regarding ACTDP Spec paragraph 3.2.3.4.2.2 Sync Clock Input: Does this requirement specifically refer to paragraph 3.2.3.4.2 Command and Data Interface, the synchronous serial interface, or was it intended to apply more generally to synchronization to an external clock of pulsed power sources and other EMI generators within the electronics suite? If the latter is the case, please provide the sync clock characteristics and specific intended purpose.

Answer 6: ACTDP paragraph 3.2.3.4.2.2 Sync Clock Input has a dual use; it is used as a part of the RS422 serial communication interface, and it is intended to apply more generally as an external clock for synchronization of digital circuitry and pulsed power sources such as switching power supplies and other EMI generators within the cryocooler electronics suite. The details of such a clock have not been defined, but a representative clock might have a 1.000000 MHz±100ppm frequency with a 50%±10% duty cycle. This frequency would be expected to be divided down by the cryocooler electronics to provide appropriate drive frequencies for PWM converters, etc. internal to the cryocooler electronics.

Question 7: Pg. 11 of the ACTDP cryocooler specification, Section 3.2.2.3.2 states the 6 K coldhead be set to a specific temperature range and also the 18 K coldhead be set to a specific range. Does this mean they are to be simultaneously controlled to the set points or does it mean one or the other is controlled?

Answer 7: It is required that both the 6K and 18K stages meet the temperature setpoint and stability requirements, independently. Any impact of this requirement may be identified per TA Section C.2.4.a.

Question 8: Pg. 7 of scope, Fig. 1.3.1-2 schematic indicates a separation of the 18 K cold mount and the 6 K cold mount by 0.5 meters. Can this separation be accommodated by a thermal link, providing requirements are met?

Answer 8: Yes

Question 9: Pg. 10 of the ACTDP cryocooler specification, Section 3.2.2.2.1 and 3.2.2.2.2 on Pg. 10 state that the baseline goal for power at beginning of life is 150 W and at end of life is 250 W. This appears to be an abnormally large change which may drive some electronics goals and designs. What is the reason for this wide variation?

Answer 9: The two power numbers are maximum allowables that the cooler should not exceed, but will hopefully not reach. The 250 watt level is designed to not preclude a viable technology because of known end-of-life power demands, but lower EOL power will get a more favorable evaluation.

Question 10: For the demonstration phase, the TA calls out brassboard electronics and also asks that a cost be included for an EM electronics option. Should the costs be for an EM alone or a brassboard alone, or for a brassboard and an additional EM? The non-recurring cost will be much different.

Answer 10: (a) The baseline contract is for Brassboard electronics only. (b) The contract option for EM electronics is to develop and deliver separate, additional set of EM electronics and associated Electrical Ground Support Equipment (EGSE) electronics. Thus, if the EM electronics option is exercised, the result would be delivery of both Brassboard electronics, and an EM set of electronics with its EGSE.

Question 11: In the TA Appendix C, Page 3, under Technical Approach, it calls for the "Description of proposed Study Phase activities and their associated cost and schedule." What type of information is being requested as regards "cost"? It is somewhat unusual to cover cost detail in the Technical Approach, especially on a Fixed Price contract.

Answer 11: Cost and schedule information go in the "Cost and Schedule" Section. In the Technical Section use pointers to direct the reader to the location in the Cost and Schedule Section were details associated with the activity are provided (i.e., "the cost details for the laboratory test to demonstrate technical maturity are in section 9.a.b.c and the schedule details are in section 9.x.y.z"). Make the linkage clear between cost, schedule, and activity/result/deliverable.

Question 12: If a private sector proposer plans to coordinate with a government lab on certain aspects of the proposal, how should costing be handled? Will the government lab submit an interagency request for transfer of funds? Should that amount appear, or be referred to, in the private firm's proposal?

Answer 12: Assuming that the private firm is the proposal leader, the proposal must include all contemplated costs for all participating organizations (lead and subcontractors), including those from the government laboratory, since the role and costs associated with the government agency constitutes "legal and managerial arrangements contemplated." (See ACDPT Technology Announcement, Appendix B, page 2, paragraph 6, which states: "Where multiple organizations are involved, only one of them may submit the proposal. The proposal should describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated.").

The other part of the question is how does the government lab get reimbursed? The private (lead) partner would submit invoices for the work performed (including work from the government partner), and JPL would issue payment. If the government lab will accept a check from a private company, the private partner would pay the government lab just like any other subcontractor. If the government lab is unwilling to accept payment from their private partner, JPL would have to obtain funding under a NASA task order, and then reimburse the government lab's parent agency via a funds transfer instrument such as a Military Interdepartmental Purchase Request (MIPR).

It is therefore important for the private sector proposer to determine whether the government lab partner will accept a check from a private entity. If not, the proposal should clearly explain the scope of JPL/NASA support needed to execute the proposed management arrangement.

Question 13: We plan to partner with a university for some of the development tasks - are there specific requirements on the letter of commitment they send us to include in the proposal?

Answer 13: Letters of commitment from cost share partners should clearly identify their entire contribution to the effort, and must be signed by a person with the authority to commit the organization to the proposed contribution.

Question 14: We are including in our cost proposal a $20K sub-contract. Is there a requirement to include in our proposal any documentation or backup for that proposed subcontract, such as a confirming letter from our proposed subcontractor? If so, does that documentation/letter count toward the 25-page limit, and where in the proposal should that documentation/letter be placed?

Answer 14: Confirmation letters from entities in subcontracting roles are not required but are desirable, especially if large contract values or critical suppliers are contemplated. Proposals may include confirmation letters from subcontractors and should contain a statement of work and a statement of support for the proposed organizational and management arrangement. Such letters should be signed by a person

with the authority to commit the organization to the proposed arrangement, and appended to the cost section of the proposal. These letters do not count towards the 25-page limit.

Question 15: The "space vacuum" specification 3.2.4.3.3, says the cryocooler shall perform in accordance with the requirements of this specification at vacuum pressures from 760 torr (atmospheric pressure) to 2.0^{-10} torr. We interpret this to mean all requirements except for those relating to refrigeration performance and cold temperatures. As written, the statement seems to suggest that we could not rely on space vacuum to insulate cold parts against convective or conductive heat loads and would have to provide for a high-vacuum enclosure surrounding all cold parts. Please clarify.

Answer 15: Your interpretation is correct. Also, paragraph 3.2.4.3.3 was intended to read: "Space Vacuum. The cryocooler shall perform in accordance with the requirements of this specification during exposure to vacuum levels from 10^{-6} torr to 2×10^{-10} torr."

Question 16: On page 1 of the ACTDP TA, it states that "This TA is restricted to U.S. organizations". Does this also place restrictions on the use of non-U.S. subcontractors or vendors?

Answer 16: There are no restrictions on the use of non-U.S. subcontractors or vendors for off-the-shelf components and subassemblies. However, non-U.S. sources for significant technical items would be counter to the objectives of the ACTDP."

Question 17: For our ACTDP proposal, we anticipate collaborating with several other institutions, some of which have extensive facilities. We are required by Announcement C.4.b.7 to describe facilities and test or experiment equipment "that are critical for carrying out the proposed Study Phase," but we are constrained to a one-page limit by Announcement B.3. Our proposal will come in under page limits elsewhere. May we exceed this limit slightly?

Answer 17: No, please conform to the page limitations as stated in Table B.3, Proposal Page Limits, of Appendix B, Page 4 of 7.

Question 18: Please clarify item 6 on p. 4 of Appendix C, pertaining to the "Copy of References" section of the proposal. The directions call for reference papers to be provided as "attachments" to the proposal. Does this mean directly embedded in this section? Or at the end of the entire proposal as an appendix? And for older papers not available electronically, are we to embed scanned images in the proposal? This would seem to be necessary for the required electronic copy (.pdf file) to be submitted (p. 2 of TA). Or would it be acceptable to omit the reference attachments from the electronic copy and only attach them to the paper copies? As separate bundles of paper. So only photo-copying would be required. No scanning.

Answer 18: Please include paper copies of references as a separate attachment to the proposal. A clearly labeled separate bundle of stapled paper is acceptable. Please make the electronic version of the references a separate pdf file; it is not necessary to embed them in the proposal file. Please make the electronic version of the proposal the same as the paper version. Do not add or omit information on the electronic media that would make it different from the paper version of the proposal.

Question 19: We were wondering about the stapling of the proposals. We have a substantial number of references to be included and it might make sense to have two separate stapled packets. One for everything but the references, and one for the references. Will this be acceptable? If so should the two sections be collated and physically attached to each other in some other way, or simply marked appropriately?

Answer 19: It is acceptable to have two separate stapled packets. One for everything but the references, and another clearly labeled separate one for the references. Physically attaching them together is desirable but not required.

Question 20: Please advise on the interpretation of Attachment A-2 (Cost Accounting Standards Notice and Certification). My understanding of the FAR is that for Contracts under $500K, then this cert is not required. I understand that approximately $2M is allocated for the Study Phase. However, I believe it is anticipated that this amount will be split into four pots. My question is are we looking at one contract for $2M or four separate contracts funded for $500K, or less, possibility negating the requirement for this attachment.

Answer 20: The requirement for Attachment A-2 (JPL Form 2842) is based upon a potential contractor's proposed amount. If the proposed amount exceeds $500,000.00 an appropriately executed "2842" is required. (Not to be confused with the requirement for Certified Cost or Pricing Data which was recently increased from $500,000.00 to $550,000.00.)